

SNWA Goal 1 Objectives 1.1, 1.6

Goal 3 Objectives 3.2, 3.4

CCSD Curriculum Essentials Framework

It is expected that:

Science

(3)3.1 students will investigate and describe how the earth is composed of different kinds of materials. WCSD 10.3.1

(3)4.7 students will investigate and describe how patterns of change may be observable and predictable. WCSD 17.3.2

(3)5.1 students will explain that science is a process that involves observing and asking questions about the natural world and seeking answers to those questions. WCSD 18.3.1

(3)5.6 students will compare a model with what it represents. 20.3.1

Purpose: This activity illustrates the way water and pollutants in the water move through earth materials.

Time: 50 minutes

For each group of 4 students you will need:

- 1/2 cup of aquarium gravel
- plastic cup (about 250 ml)
- plastic cup (about 250 ml) with a single small nail hole punched into the bottom
- dropper of food coloring
- plain water
- measuring cup or beaker

Each student will need:

- science notebook

Introduction

1. Tell students that on the way to work today you were observing people in their yards. One man was watering his flowers with a hose. In another yard, a woman was pouring a bucket of dark liquid onto the grass. At still another house you watched a teenager pour the soapy water from washing her car into the dirt around a bush. You started wondering what happened to the liquids people were pouring onto their lawns and dirt. Ask students if they have ideas about where water or other liquids poured onto the grass or ground go.



2. Allow time for students to share their ideas. If they say “into the ground,” ask them to think about where into the ground. Straight down? How far? Tell students that today they will have an opportunity to see for themselves what happens when pollutants soak into or run over the ground and the difficulty of removing them from the earth and water.

Teacher Note:

Both the water that runs over the ground and the water that soaks into the ground eventually reaches the Las Vegas Wash, then flows untreated into Lake Mead.

Making Discoveries

3. Demonstrate the set-up for the activity while students watch.
 - a) Place about 200 ml of aquarium gravel into the plastic cup with a hole in the bottom.
 - b) Holding the cup with the gravel over the other plastic cup, carefully drip 10 drops of food coloring onto the gravel. (This represents the pollutants.)
 - c) Carefully measure 100 ml of clean water into a calibrated beaker or measuring cup.
 - d) Holding the cup of polluted gravel over the plastic cup, pour the clean water over the gravel and let it drain into the cup below.
4. Say, “Your task is to pollute your gravel and find out how much water it takes to get rid of the color. Record the amount of water needed to remove the color (pollutants) from the gravel. How can you keep track of how much water it takes?”

Teacher Note:

You may need to discuss with the students how to keep track of how much water it takes. Students should continue to add amounts of water until the water runs clear.

5. Allow time for students to set up and complete the activity (about 20 minutes).

Closing

6. Have each group share their results and record the data on a class chart. Use the chart to discuss how liquids we pour on the ground get into our water. How hard is it to finally get rid of something we didn't want in the ground? Discuss why it is important to not let pollutants get in the water.

Extension

7. Try the activity again, using different types of soil or small pebbles. Have students predict whether it will take more or less clean water to remove the pollutant.

Where does the water go?



Word Bank

The teacher should introduce or review the following vocabulary with the students within the context of this lesson.

model: a three-dimensional representation of something; a small example

pollutant: something that makes a material unhealthy or impure

